

**FACT SHEET FOR NPDES PERMIT WA0022659
CITY OF MORTON**

SUMMARY

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INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the FCWA is the National Pollutant Discharge Elimination System (NPDES) permits, which is administered by the Environmental Protection Agency (EPA). The EPA has delegated responsibility to administer the NPDES permit program to the state of Washington on the basis of RCW 90.48 which defines the Department of Ecology's (the Department) authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the state include procedures for issuing permits (Chapter 173-220 WAC), technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC) and water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least 30 days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures).

This fact sheet has been reviewed by the Permittee and errors in fact have been corrected. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments (Appendix C) will become part of the file on the permit, and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Changes to the permit will be addressed in Appendix C--Response to Comments.

GENERAL INFORMATION

Applicant: City of Morton

Facility Name and Address: City of Morton Wastewater Treatment Facility
West End of Aberdeen Street
Morton, WA

Mailing Address: P.O. Box 1089
Morton, WA 98356

Type of Treatment: Oxidation Ditch, Extended Aeration, with Anoxic Mixer, Chlorine Disinfection, Aerobic Sludge Holding Tank, Sludge Drying Beds, Covered Windrow Sludge Composting

Discharge Location: Tilton River

The Tilton River, a tributary of the Cowlitz River, has its headwaters in the mountains north and east of the City of Morton (the City), Washington. From there it flows south through the City and then veers east, paralleling State Route No. 12. Another fork joins downstream of Morton. The river then turns south, discharging into a cove in Mayfield Lake. The wastewater treatment plant outfall discharges to the river on the west side of Morton on the north side of the Tilton River.

Latitude: 46° 33' 37" N.
Longitude: 122° 17' 08" W.

Water Body ID Number: WA-26-1095

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

History

The existing oxidation ditch was constructed in 1976. It was designed to treat a flow of 0.62 mgd and a peak flow of 1.29 mgd. The new plant replaced a clarigester and trickling filter plant. An anoxic mixer was added to the ditch in 1993. Two covered composting pads were added in the last couple of years for windrow composting.

Collection System Status

The City's collection system consists of 35,819 LF of gravity sewers, 101 manholes, and a single-lift station located adjacent to the wastewater treatment facility. Most of the sewer lines are non-reinforced concrete pipe.

In 1977, chemical grouting and rehabilitation was conducted on approximately 5,000 LF of the system and 10 manholes. The City continues to survey and smoke test their sanitary sewer system.

The amount of \$1,008,000 worth of sewer line replacement (32,000 LF) was recommended to the City by their consultant, Gray & Osborne in a Capital Improvement Plan prepared in 1991. Because of funding constraints, only the Lester Drive Sewer Line was included in the City's five-year Capital Improvement Plan (\$45,571). The recommendation was made because of high infiltration/inflow (I/I) flows entering the collection system. I/I has resulted in reduced treatment efficiency and hydraulic overloading of certain process components at the treatment plant. The City staff, at that time, was in the process of conducting a survey to locate sources of I/I. The report recommends replacement of the defective parts of the collection system because of the age of the system. Some parts of the collection system are 50 years old.

Morton has joined the Washington Rural Water Association to assist with further testing. During the last three years, the City has identified problems with manhole covers leaking, leaking private laterals, leaking sewer mains, and broken and worn pipe.

Treatment Processes

The treatment processes consist of headworks which consists of two manually-cleaned grit channels, comminutor and bypass bar screen, extended aeration oxidation ditch with rotor and anoxic mixer, two secondary clarifiers, two chlorine contact chambers, chlorinator, aerobic digester, four covered blacktop sludge drying beds, and two covered windrow composting pads.

The treatment plant has a Class II complexity rating. The chief operator is certified at the Class II level for wastewater operators. The chief operator is the only certified wastewater plant operator at the facility. Presently they have an assistant who does groundskeeping and maintenance at the plant. The assistant position is seasonal during the summer months.

The chief operator works a 40 hour week. The original operation & maintenance manual estimated the manhours required to operate the facility at 42.4 manhours/week. This estimate did not include the manhours required to operate the composting facility, but it must have included some time for liquid

sludge hauling to the ultimate disposal site. The City, at present, does not have to haul the composted sludge away. They sell it to customers who come to pick it up at ten dollars per pickup load.

The plant was constructed in 1976 with a federal grant. Recently the plant has been upgraded with a new anoxic mixer in the oxidation ditch and new sludge composting facilities. The anoxic selector received State Centennial Cleanwater Grant funding.

The treatment plant has experienced recent effluent violations related to high winter I/I flows and a high Sludge Volume Index (SVI averaging about 200 milliliters per gram (ml/g)) indicating a slow settling sludge. As a result of the slow settling sludge, solids were washed out of the secondary clarifier into the effluent. The operator took a sample of sludge to the Olympia LOTT wastewater plant for filament identification and diagnosis. The lab technician identified the filament as one which is favored in low F/M environments which is typical for an oxidation ditch plant.

The treatment plant return activated sludge pumping and conveyance (RAS) system is limited in its ability to deliver 100 percent return anywhere near peak flow. In conversations with the operator, the maximum output of the RAS system was only about 700,000 gpd. The operator has found that the plant can only treat a flow of about 700,000 gpd with the RAS at full capacity.

Treatment plant solids washout would be eliminated during wet weather if in addition to wet weather filament control, one of the following things occurred:

1. the wet weather flow to the treatment plant is kept below 700,000 gpd.
2. a new clarifier is added along with a revised RAS pumping scheme.

Filament control could be accomplished by continued use of chlorine on the mixed liquor, adding computerized controls on the anoxic mixer, or the addition of a selector (anoxic or oxic) at the head of the plant.

Discharge Outfall

The outfall line continuously conveys the chlorinated secondary effluent to an overflow manhole. Under normal operation, the flow would continue out to the multiport diffuser, a short distance away. If the outfall diffuser gets plugged, the flow overflows to another pipe higher up in the overflow manhole and discharges to a single port diffuser. The outfall discharges to a grassy swale on the river gravel bar because the river channel moved about 200 feet away from the diffuser location. The diffuser, if it still attached, is buried under the gravel of a Tilton River gravel bar. The effluent flow in the swale travels several hundred feet downstream before flowing into the Tilton River.

Residual Solids

The treatment facilities remove solids during the treatment of the wastewater at the headworks (grit and screenings) and secondary clarifiers, in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, and screenings are drained and disposed of as solid waste at the local landfill. Solids removed from the secondary clarifier are aerobically digested, dried in a sludge drying bed, windrow composed to 503 Class A standards, and sold as fertilizer at ten dollars a pickup load under a permit from the Lewis County Health District. The Operation and Maintenance Manual needs to be updated to include the new composting operation.

PERMIT STATUS

The previous permit for this facility was issued on August 12, 1980. The permit was extended without change by letter on April 2, 1986. The previous permit placed effluent limitations on 5-day Biochemical Oxygen Demand (BOD₅), Total Suspended Solids (TSS), pH, and Fecal Coliform bacteria. The effluent limitations for these parameters taken from Special Condition S1. of the existing permit are as follows:

Effluent Limitations Parameter	Monthly Average	Weekly Average
Biochemical oxygen demand, (5 day)	30 mg/l, 100 lb/day	45 mg/l, 150 lb/day
Suspended solids*	30 mg/l, 100 lb/day	45 mg/l, 150 lb/day
Fecal coliform bacteria	200/100 mls	400/100 mls
pH	Shall not be outside the range of 6.0 to 8.5	

The monthly and weekly averages for BOD₅ and Suspended Solids are based on the arithmetic mean of the samples taken. The averages for fecal coliform are based on the geometric mean of the samples taken.

*The monthly average effluent concentration limitations for BOD₅ and Suspended Solids shall not exceed 30 mg/l or 15 percent of the respective influent concentrations, whichever is more stringent.

Total available (residual) chlorine shall be maintained which is sufficient to attain the Fecal Coliform limits specified above. Chlorine concentrations in excess of that necessary to reliably achieve these limits shall be avoided.

An application for permit renewal was submitted to the Department on May 26, 1995, and accepted by the Department on November 8, 1995.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility received its last inspection on October 19, 1995.

Ever since the treatment plant was constructed, it has had a history of not meeting permit limits on influent flow, BOD₅ percent removal, and TSS percent removal. On occasion, TSS and BOD₅ concentrations are violated. The treatment plant has been plagued by a growth of the organisms Daphnia and Bosmina in the summer, resulting in TSS violations. One of the causes of the plant's process problems was that the oxidation ditch was oversized for summer operation. Since the City has a tremendous I/I problem, it necessitated the upsizing of the ditch design to help prevent solids washout and provide adequate treatment capacity during the winter. But because the City has only one ditch, the plant does not have a lot of flexibility for seasonable variation. The plant acted like an aerated lagoon (ditch hydraulic detention times upwards of seven days) during the summer months, causing the growth of unwanted organisms. The winter violations are primarily caused by high I/I flows.

To mitigate the underloaded summer conditions, the City installed an anoxic mixer in the oxidation ditch in May of 1993. With the mixer, mixing and circulation of the mixed liquor in the oxidation ditch can be maintained while the two aeration rotors are switched off. This results in shortening the aeration time of the mixed liquor and better summer operation. The Daphnia problem has disappeared. The effluent pH has increased to acceptable limits. Compliance has improved.

However, recently, the plant has produced a low F/M filamentous bacteria which aggravated a winter mixed liquor solids washout problem during high I/I flow events in the winter of 1993-94. The Sludge Volume Index (SVI), a measure of how well the mixed liquor settles in the secondary clarifier, has been averaging 150-200 ml/g. A more acceptable SVI would be less than 150 ml/g and preferably around 100 ml/g for efficient balance of clarifier capacity and clarity of effluent.

In July 1995, the operator instituted a program of chlorinating the mixed liquor at four pounds per one-thousand pounds of mixed liquor volatile suspended to kill some of the filamentous organisms. The chlorine application seems to be effective at lowering the SVI. It will remain to be seen how cost-effective this procedure is in the long run and whether it helps the winter solids washout problem. There are other operational and/or design changes which could be explored.

The following table indicates the number of violations of their NPDES permit the City has had from September 1990 through September 1995. The information was obtained from a WPLCS printout covering that time period. The bulk of the violations occurred prior to when the anoxic mixer was installed. Violations after the mixer was installed are largely confined to the high winter flow season. The application of chlorine to the mixed liquor has helped to mitigate this problem, but not eliminate it. The plant would perform better in the winter time if either the flows were reduced by I/I correction or another clarifier were constructed along with a revised return activated sludge pumping scheme. The telescoping valve return pumping system capacity is also a limiting factor in handling the high flows.

Violation Summary For Morton, WA, Sept., 1990 - 1995

Total Suspended Solids percent removal	Monthly Average	13
Total Suspended Solids concentration	Monthly Average	3
Total Suspended Solids mass loading to river	Monthly Average	4
Total Suspended Solids concentration	Weekly Average	3
Total Suspended Solids mass loading to river	Weekly Average	5
Biochemical Oxygen Demand, 5-day, percent removal	Monthly Average	11
Exceedance of maximum influent flow	Monthly Average	8
pH, effluent	Minimum	23
Fecal Coliform, geometric mean	Weekly	1
Fecal Coliform, geometric mean	Monthly	1

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the annual average daily discharge was reported in the NPDES application and in discharge monitoring reports from April 1994 through April 1995. The effluent is characterized as follows:

<u>Parameter</u>	<u>Concentration</u>	<u>Origin</u>
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BOD5	4 mg/l	Domestic
Chlorine	0.2 mg/l	Disinfection
Fecal Coliform	19 colonies per 100 mls	Domestic
Total Suspended Solids	7 mg/l	Domestic
Ammonia	0.7 mg/l	Domestic
Nitrate	7 mg/l	Domestic

There are no industrial dischargers to the wastewater system.

PROPOSED PERMIT LIMITATIONS AND CONDITIONS

Federal and state regulations require that effluent limitations set forth in a NPDES permit must be either technology or water quality based. Technology-based limitations for municipal discharges are set by regulation (40 CFR 133 and Chapters 173-220 and 173-221 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC). The most stringent of these types of limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

DESIGN CRITERIA

In accordance with Washington Administrative Code (WAC) 173-220-130(1)(a), effluent limitations shall not be less stringent than those based upon the design criteria for the facility, which are contained in approved engineering plans, reports, or approved revisions. Also, in accordance with WAC 173-220-150 (1)(g), flows or waste loadings shall not exceed approved design criteria.

The design criteria for this treatment facility are taken from the Operation & Maintenance Manual prepared by Gray & Osborne and are as follows:

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Average Daily Flow:	0.296 mgd
Design Average Daily Flow:	0.62 mgd
Peak Flow:	1.29 mgd
BOD influent loading:	440 lbs/day
TSS influent loading:	506 lbs/day
Design population equivalent:	2,200

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Municipal wastewater treatment plants are a category of discharger for which technology-based effluent limits have been promulgated by federal and state regulations. These effluent limitations are given in the Code of Federal Regulations (CFR) 40 CFR Part 133 (federal) and in Chapter 173-221 WAC (state). These regulations are performance standards that constitute all known available and reasonable methods of prevention, control, and treatment for municipal wastewater.

The following technology-based limits for pH, fecal coliform, BOD₅, and TSS are taken from Chapter 173-221 WAC are:

<u>pH</u> :	shall be within the range of 6 to 9 standard units.
<u>Fecal Coliform Bacteria</u> :	Monthly Geometric Mean = 200 colonies/100 ml Weekly Geometric Mean = 400 colonies/100 ml
<u>BOD₅</u> : (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed 15 percent of the influent concentration. Average Weekly Limit = 45 mg/L
<u>TSS</u> : (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed 15 percent of the influent concentration. Average Weekly Limit =45 mg/L

The following technology-based mass limits are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b).

BASED ON EFFLUENT CONCENTRATION

Monthly effluent mass loadings (lbs/day) based on effluent concentration were calculated as maximum monthly design flow (0.62 mgd) x Concentration limit (30 mg/L) x 8.34 (conversion factor) = mass limit (155 lbs/day).

The weekly average effluent mass loading based on effluent concentration is calculated as 1.5 X monthly loading = mass limit (233 lbs/day).

BASED ON 85 PERCENT REMOVAL REQUIREMENT *

The monthly effluent BOD₅ mass loading is 440 lb/day x decimal percent allowance (1.00 - .85) = mass limit (66 lb/day).

The weekly average effluent BOD₅ mass loading is calculated as 1.5 X monthly effluent BOD₅ mass loading (66 lb/day) = mass limit (99 lb/day).

The monthly effluent TSS mass loading is the influent mass TSS loading (506 lb/day) x decimal percent allowance (1.00 - .85) = mass limit (76 lb/day).

The weekly average effluent mass loading is calculated as 1.5 X monthly effluent TSS mass loading (76 lb/day) = mass limit (114 lb/day).

* These limits apply because they are the lower of the two sets of mass effluent limits.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

Numerical Criteria for the Protection of Aquatic Life

"Numerical" water quality criteria are numerical values set forth in the state of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

Numerical Criteria for the Protection of Human Health

The state was issued 91 numeric water quality criteria for the protection of human health by the U.S. EPA (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

Narrative Criteria

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the state of Washington.

Antidegradation

The state of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when the natural conditions of a receiving water are of higher quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. More information on the state Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

The Department has reviewed existing records and is unable to determine if ambient water quality is either higher or lower than the designated classification criteria given in Chapter 173-201A WAC; therefore, the Department will use the designated classification criteria for this water body in the proposed permit. The discharges authorized by this proposed permit should not cause a degradation of existing water quality or beneficial uses.

Critical Conditions

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

Mixing Zones

The Water Quality Standards allow the Department to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention and control (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100.

The National Toxics Rule (EPA 1992) allows the chronic mixing zone to be used to meet human health criteria.

Description of the Receiving Water

The facility discharges to the Tilton River which is designated as a Class A receiving water in the vicinity of the outfall. Other nearby point source outfalls include the Town of Mossyrock discharging to the Cowlitz River. Characteristic uses include the following:

Class A (Excellent): water supply (domestic, industrial, agricultural); stock watering; fish migration; fish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation.

The City's Wastewater Treatment Plant discharges to the Tilton River. The Tilton River has a Class A beneficial use designation. The Class A Surface Water Quality Standards are as follows:

Fecal coliform organisms	100 colonies/100 mL, and not have more than 10 percent of all samples obtained for calculating the geometric mean value exceeding 200 colonies/100 mL.
Dissolved Oxygen	exceed 8.0 mg/L.
Temperature	shall not exceed 18 deg. C.. Incremental temperature increases resulting from point source activities shall not, at any time, exceed $t=28/(T+7)$. t = max. temp. increase at boundary of mixing zone. T = ambient or background temperature in the vicinity of the outfall.
pH	6.5 - 8.5
Turbidity	shall not be greater than 5 NTU's over background turbidity when the background turbidity is 50 NTU or less, or have more than a 10 percent increase in turbidity when the background turbidity is more than 50 NTU.
Toxic, radioactive, or deleterious material	Concentrations shall be below those which have the potential either singularly or cumulatively to adversely affect characteristic water uses, cause acute or chronic conditions to the most sensitive biota health, as determined by the department (see WAC 173-201A-040 and 173-201A-050).
Aesthetic values	shall not be impaired by the presence of materials or their effects, excluding those of natural origin, which offend the senses of sight, smell, touch, or taste.

Water quality of this class shall meet or exceed the requirements for all or substantially all uses.

Surface Water Quality Criteria

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992).

Consideration of Surface Water Quality-Based Limits for Numeric Criteria

A normal dilution zone analysis to determine the numerical effluent limits is not possible for this discharger. The diffuser, if it still exists, is buried in a river sand bar about 200 feet from the river. At least some of the plume from the buried outfall/diffuser surfaces to form a small grass lined shallow water channel that flows parallel through brush and small trees. Some or all of the effluent surface discharges to the Tilton River from the side channel several hundred feet downstream of the diffuser site. The river channel in the vicinity of the outfall line is very dynamic and threatens to move each year. It would not be reasonable or prudent for the City to move the outfall since the river could move again the following wet season.

Another reason that water quality-based limits cannot be computed is that no ambient monitoring data other than stream flows exists for the Tilton River.

Because of the above reasons, numeric water quality criteria could not be established other than water quality standards associated with a Class A River.

<u>Parameter</u>	<u>Sampling Point</u>	<u>Sample Type</u>	<u>Frequency</u>
Dissolved Oxygen	surface effluent plume, farthest possible point downstream before river dilution	Grab	1/week
Temperature	surface effluent plume, farthest possible point downstream before river dilution	Grab	1/week
pH	surface effluent plume, farthest possible point downstream before river dilution	Grab	1/week
Fecal Coliform	surface effluent plume, farthest possible point downstream before river dilution	Grab	1/week
Chlorine Residual	surface effluent plume, farthest possible point downstream before river dilution	Grab	1/week
Ammonia	surface effluent plume, farthest possible point downstream before river dilution	Grab	1/week
Turbidity	surface effluent plume, farthest possible point downstream before river dilution	Grab	1/week

Whole Effluent Toxicity

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory

tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent and, therefore, this approach is called whole effluent toxicity (WET) testing.

Toxicity caused by unidentified pollutants is not expected in the effluent from this discharge as determined by the screening criteria given in Chapter 173-205 WAC. Therefore, no whole effluent toxicity testing is required in this permit. The Department may require effluent toxicity testing in the future if it receives information that toxicity may be present in this effluent.

Human Health

The Department will require further effluent plume sampling before evaluation of the applicants discharge for chemicals which would be covered under human health criteria.

Sediment Quality

The Department has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

The Department has determined through a review of the discharger characteristics and effluent characteristics that this discharge has no reasonable potential to violate the Sediment Management Standards.

COMPARISON OF EFFLUENT LIMITS WITH THE EXISTING PERMIT ISSUED 8/12/80

No change in effluent limits is proposed at this time. Changes may be made if in stream and end of discharge monitoring indicated that it is warranted.

MONITORING AND REPORTING

Effluent monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

The monitoring and testing schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of the Department Permit Writer's Manual for activated sludge. This frequency of monitoring is considered to be the minimum frequency to document compliance.

Additional monitoring is required in order to further characterize the effluent. These monitored pollutants could have a significant impact on the quality of the surface water.

OTHER PERMIT CONDITIONS

PREVENTION OF FACILITY OVERLOADING

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the Permittee to take the actions

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detailed in proposed permit requirement S.4. to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Condition S.4. restricts the amount of flow.

OPERATION AND MAINTENANCE (O&M)

The proposed permit contains Condition S.5. as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

The proposed permit requires submission of an updated O&M manual for the entire sewage system.

RESIDUAL SOLIDS HANDLING

To prevent water quality problems the Permittee is required in permit Condition S7. to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503. The disposal of other solid waste is under the jurisdiction of the Lewis County Health Department.

PRETREATMENT

The City is not required to have a pretreatment program because it has no significant industrial users on the system which would cause problems with their wastewater treatment system. The plant flow is also less than the 5 MGD threshold flow capacity used by EPA and the Department in determining the need for a pretreatment program.

SLUDGE MANAGEMENT PLAN

The City will be required to update their Sludge Management Plan as needed.

OUTFALL EVALUATION

Proposed permit Condition S.9. requires the Permittee to conduct an outfall inspection and submit a report detailing the findings of that inspection. The purpose of the inspection is to determine the condition of the discharge pipe and diffusers.

GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual NPDES permits issued by the Department.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards, Sediment Quality Standards, or Ground Water Standards, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic life, and the beneficial uses of waters of the state of Washington. The Department proposes that this permit be issued for five years.

REVIEW BY THE PERMITTEE

A proposed permit was reviewed by the Permittee for verification of facts. Only factual items were corrected in the draft permit and fact sheet.

REFERENCES FOR TEXT AND APPENDICES

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APPENDIX B--GLOSSARY

Acute Toxicity--The lethal effect of a compound on an organism that occurs in a short period of time, usually 48 to 96 hours.

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD₅--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD₅ is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Class 1 Inspection--A walk-through inspection of a facility that includes a visual inspection and some examination of facility records. It may also include a review of the facility's record of environmental compliance.

Class 2 Inspection--A walk-through inspection of a facility that includes the elements of a Class 1 Inspection plus sampling and testing of wastewaters. It may also include a review of the facility's record of environmental compliance.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Combined Sewer Overflow (CSO)--The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Daily Maximum Discharge Limitation--The greatest allowable value for any calendar day.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Infiltration and Inflow (I/I)--"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of rainfall-caused surface water drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

Mixing Zone--An area that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in state regulations (Chapter 173-201A WAC).

Monthly Average Discharge Limitation--The average of the measured values obtained over a calendar month's time.

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C--RESPONSE TO COMMENTS